

# PATENT COOPERATION TREATY

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### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference		<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/EP2004/012757		International filing date (day/month/year) 10.11.2004	Priority date (day/month/year) 28.11.2003	
International Patent Classification (IPC) or national classification and IPC INV. C11D17/06 C11D11/00 C11D3/02				
Applicant UNILEVER PLC				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  30.05.2005		Date of completion of this report  03.04.2006		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized officer  Grittern, A  Telephone No. +31 70 340-2459		



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/012757

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-11 as originally filed

**Claims, Numbers**

1-13 received on 10.08.2005 with letter of 27.07.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/012757

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-13
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following document:

D4: US-A-5482642

2. The document D4 is regarded as being the closest prior art to the subject-matter of claim 1 because it also addresses the degradation problems due to the presence of heavy metal ions in detergent products. This document shows (the references in parentheses applying to this document):

a process for making a solid detergent composition by mixing part of anionic surfactant, carrier and sequestrant in a high speed mixer and adding another part of anionic surfactant, sequestrant and carrier material at another stage of the process.

The subject-matter of claim 1 differs from this known D4 in that one part of anti-oxidant/sequestrant and/or support material is introduced in the mixer at a first point of introduction, while the remainder of these components is introduced at a second point of introduction downstream from the first point of introduction.

Thus the subject-matter of claim 1 is new (Art. 33 (2) PCT).

3. The object of the present invention may be seen in to overcome the problem of malodour occurrence due to the presence of heavy metal ions in surfactants.

The problem is solved by a process as disclosed in present claim 1.

The prior art does not lead the skilled person to the subject-matter of claim 1.

Therefor the subject-matter of claim 1 is inventive (Art. (3) PCT).

The same applies for dependent claims 2-13.

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### CLAIMS

1. Process for the production of powdered detergent composition with the composition comprising:

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- 1 wt % to balance of anionic surfactants
- 0 to 25 wt %, preferably 1 to 10 wt % of fatty acid derivatives, in particular fatty acid soaps
- up to 75 wt %, in particular 1 to 25 wt % of a support material
- less than 25 wt %, preferably less than 10 wt % and in particular 1 to 5 wt % of total water (i.e. sum of free and bound water)
- 0 to 3 wt % of perfumes
- 0 to 75 wt %, preferably 0 to 50 wt % and in particular 5 to 30 wt % of builder material
- 0.05 to 5 wt %, in particular 0.1 to 3 wt % and most preferably 0.2 to 2 wt % of a sequestrant and/or anti-oxidant, while the composition contains more than 10 ppm, in particular 10 to 1000 ppm of transition (heavy) metal ions, in particular derived from Fe or Cu

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wherein the ingredients of the detergent composition, comprising at least part of the total amount present in the whole composition of at least one of the ingredients selected from the group consisting of support material, anti-oxidant and sequestrant are introduced in a mixer at a first point of introduction and homogenised at a temperature between 10 and 160°C while the remainder of anti-oxidant and/or sequestrant

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and/or support material is introduced in the mixer at a second point of introduction downstream from the first point of introduction, while the mixture obtained can be sprayed dried by spraying it on the support material using a thin layer drying process.

2. Process according to claim 1 wherein the mixer applied is selected from the group consisting of:  
a scraped wall heat exchanger/mixer/drier, a high shear mixer granulator; a medium shear mixer granulator, or a low shear mixer granulator.
3. Process according to claims 1 or claim 2 wherein the mixer is a VRV mixer.
4. Process according to claims 1 to 3 wherein the VRV mixer is applied with a tip speed of 10 to 50 m s<sup>-1</sup>, preferably 18-45 and most preferably 30 to 40 m.s<sup>-1</sup>, and a distance between wall and blades of up to 10 mm.
5. Process according to claims 1 to 4 wherein the VRV mixer is used with a heater shell area of up to 32 m<sup>2</sup>, an inner superficial gas velocity (countercurrent) of up to 4 m.s<sup>-1</sup>, pref up to 2 m.s<sup>-1</sup> and a residence time of up to 300 sec, preferably up to 60 sec.
6. Process according to any preceding claim wherein the anionic surfactant is selected from salts of LAS and/or PAS.

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7. Process according to any preceding claim wherein the amount of anionic surfactant is 5 to 75 wt%, preferably 10 to 50 wt%.
- 5 8. Process according to any preceding claim wherein the soap is a fatty acid salt from a fatty acid with 12 to 20 C-atoms, in particular with 16 to 18 C-atoms.
- 10 9. Process according to any preceding claim wherein the sequestrant and or anti-oxidant is selected from the group consisting of: EDTA; STP; Citric acid; a BHT derivative such as Tinogard; or Irganox or Tetronic.
- 15 10. Process according to any preceding claim wherein the support is selected from the group consisting of: zeolites; Al-silicates; silicates, alkali carbonates or alkali hydrogencarbonates; cellulose derivatives; polymers or copolymers from Na-acrylate.
- 20 11. Process according to any preceding claim wherein the composition is free of an ultraviolet absorber.
- 25 12. Process according to any preceding claim wherein the composition also comprises up to 20 wt % of other surfactants, in particular up to 20 wt% of non-ionic and/or cationic surfactants.
- 30 13. Process according to any preceding claim wherein the composition has an untapped bulk density of more than 600 g/l.